

Wu, Jennifer

From: Wu, Jennifer
Sent: Friday, April 07, 2017 11:16 AM
To: Emi Kondo - NOAA Affiliate
Subject: LNFH Permit: DO, pH, and phosphorus limits
Attachments: Icicle Creek scenarios2.doc; QUAL2Kw Interim Phosphorus Limits Model Outputs.xlsx

Hi Emi, as in my voicemail, here are a couple of responses to your questions. Feel free to let me know if you have questions. - Jenny

1. Interim Phosphorus Limits and DO and pH responses. EPA contacted Ecology to obtain the QUAL2Kw model runs from the 2002/2003 study where phosphorus loads and other site-specific conditions were input into the model to simulate the DO and pH responses. Ecology sent a number of files including modifications to the QUAL2Kw modeling in Icicle Creek that Ecology completed in 2011 to simulate increased flows from Snow. The scenarios are described above in Icicle Creek scenarios2.docx. EPA then took the QUAL2Kw model runs these scenarios and made the following modifications: 1) We changed the projected Snow Lake diversion into Snow Creek input of 1.5 cms back to the value in the original 2002 study of 0.47 cms. This is approximately 12,000 acre-feet/year, which is more than 7000 acre-feet/year, the amount that LNFH typically diverts from Snow Lake (see page 12 of the Fact Sheet), but less than the amount that LNFH has water rights for to divert up to 16,000 acre-feet/year. 2) We changed the phosphorus concentrations and flows for Outfalls 001 and 002 to be the interim daily average phosphorus limits and 95th percentile flows. The values for Outfall 001 are 15 microg/L and 46 cfs, and for Outfall 002 are 97 microg/L and 7.1 cfs. We used the daily average limits, since the facility could not discharge their daily maximum limits every day and meet the daily average limits. The results are included above. The peak pH at the mouth of Icicle Creek was modeled to be 9.05 S.U during the critical low flow period of September 2002. pH impacts should be even lower in non-critical times of the year when flows are higher. The DO levels are all above 9.5 mg/L. The actual model and full model file is too big to send over email, so I've attached the outputs above.

- 2. Final phosphorus limit meeting Washington's pH standards.** Page 24 of the Fact Sheet include a description of the TMDL meeting water quality standards; Page 25 describes the wasteload allocations for phosphorus in the Wenatchee River DO and pH TMDL; and Page 40 describes how the permit uses the wasteload allocation in the TMDL. This shows that the final permit limits will result in meeting DO and pH water quality standards for which Icicle Creek is impaired, since the final permit limit is the same mass loading as the wasteload allocation in the TMDL.